

=> FILE REG

FILE 'REGISTRY' ENTERED AT 13:48:32 ON 31 OCT 2006  
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FILE 'LREGISTRY' ENTERED AT 11:52:58 ON 31 OCT 2006

L1 STR  
L2 STR

FILE 'REGISTRY' ENTERED AT 11:57:12 ON 31 OCT 2006

L3 50 S L1 OR L2  
L4 SCR 2043  
L5 50 S (L1 OR L2) NOT L4  
L6 STR L1  
L7 STR L2  
L8 50 S (L6 OR L7) NOT L4  
L9 2501 S (L6 OR L7) NOT L4 FUL  
SAV L9 WEI969/A  
E VINYLETHYLENE CARBONATE/CN  
L10 1 S E3  
E VINYLENE CARBONATE/CN  
L11 1 S E3  
E SILICON/CN  
L12 1 S E3  
E TIN/CN  
L13 1 S E3  
L14 383491 S SI/ELS AND AYS/CI  
L15 59726 S SN/ELS AND AYS/CI

FILE 'HCA' ENTERED AT 12:06:59 ON 31 OCT 2006

L16 2556 S L9  
L17 185 S L10  
L18 952 S L11  
L19 2863 S (L12 OR SILICON OR SI) (2A) (ANOD## OR (NEG# OR NEGATIV?)  
L20 3383 S (L13 OR TIN OR SN) (2A) (ANOD## OR (NEG# OR NEGATIV?) (A) E  
L21 227886 S BATTERY OR BATTERIES OR (ELECTROCHEM? OR ELECTROLY? OR  
L22 670 S L21 AND L16  
L23 17 S L22 AND L19  
L24 11 S L22 AND L20  
L25 132 S L21 AND L17  
L26 594 S L21 AND L18  
L27 2 S L25 AND L19  
L28 5 S L25 AND L20  
L29 17 S L26 AND L19

L30 10 S L26 AND L20

FILE 'REGISTRY' ENTERED AT 13:20:44 ON 31 OCT 2006

L31 383491 S L14 OR L14

L32 193491 S L31 RAN=(,165812-28-2)

L33 190000 S L31 RAN=(165812-29-3,)

FILE 'HCA' ENTERED AT 13:22:26 ON 31 OCT 2006

L34 1592 S L15(L) (ANOD## OR (NEG# OR NEGATIV?) (A) ELECTROD##)

L35 4636 S (L32 OR L33) (L) (ANOD## OR (NEG# OR NEGATIV?) (A) ELECTROD

L36 8 S L21 AND (L16 OR L17 OR L18) AND L34

L37 5 S L21 AND (L16 OR L17 OR L18) AND L35

L38 13 S L27 OR L28 OR L36 OR L37

L39 4 S (L24 OR L30) NOT L38

L40 17 S L27 OR L28 OR L36 OR L37 OR L24 OR L30

L41 10 S (L23 OR L29) NOT L40

L42 9 S L40 AND 1840-2003/PRY, PY

L43 7 S L41 AND 1840-2003/PRY, PY

=&gt; FILE HCA

FILE 'HCA' ENTERED AT 13:48:51 ON 31 OCT 2006

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=&gt; D L42 1-9 CBIB ABS HITSTR HITIND

L42 ANSWER 1 OF 9 HCA COPYRIGHT 2006 ACS on STN

143:81122 lithium secondary **battery**. Miyachi, Mariko; Utsugi, Koji; Kusachi, Yuki; Yamamoto, Hironori (NEC Corporation, Japan). PCT Int. Appl. WO 2005057715 A1 20050623, 95 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IS, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (Japanese). CODEN: PIXXD2. APPLICATION: WO 2004-JP18715 20041215. PRIORITY: JP 2003-416516 20031215; JP 2004-317298 20041029; JP 2004-317280 20041029.

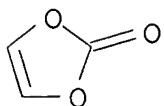
AB The present invention aims to provide a lithium secondary **battery** with excellent characteristics such as energy d. and

emf., which is also excellent in cycle life and shelf life stability. Disclosed is a secondary **battery** comprising at least a pos. electrode, a neg. electrode and an electrolyte soln. wherein the neg. electrode contains a metal, metalloid or oxide, which adsorbs/desorbs an alkali metal or alk. earth metal, and a carbon material as the neg. electrode active material, and the electrolyte soln. contains a non-protonic solvent wherein at least an electrolyte is dissolved and a chain disulfone compd.

IT **872-36-6**, Vinylene carbonate  
(additives for lithium non-aq. electrolyte soln.)

RN 872-36-6 HCA

CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



IT **7440-31-5**, Tin, uses  
(anode active substance for lithium secondary  
**batteries**)

RN 7440-31-5 HCA

CN Tin (8CI, 9CI) (CA INDEX NAME)

Sn

IC ICM H01M010-40  
ICS H01M004-02; H01M004-38; H01M004-48; H01M004-58  
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
ST lithium secondary **battery** anode active substance  
electrolyte additive disulfone

IT **Battery** anodes  
(anode active substances for)

IT Secondary **batteries**  
(lithium; additives for)

IT **Battery** electrolytes  
(nonaq.; disulfone additives for)

IT **872-36-6**, Vinylene carbonate 1120-71-4, Propane sultone  
2997-54-8 6330-39-8 22063-27-0 22063-28-1 23601-06-1  
99591-74-9 152949-20-7 500878-47-7 855472-38-7 855472-43-4  
855472-46-7  
(additives for lithium non-aq. electrolyte soln.)

IT 1303-86-2, Boron oxide (B2O3), uses 1309-37-1, Ferric oxide, uses  
1314-56-3, Phosphorus oxide (P2O5), uses 7429-90-5, Aluminum, uses  
7439-89-6, Iron, uses 7439-92-1, Lead, uses 7440-02-0, Nickel,  
uses 7440-21-3, Silicon, uses 7440-22-4, Silver, uses  
**7440-31-5**, Tin, uses 7440-32-6, Titanium, uses

7440-36-0, Antimony, uses 7440-50-8, Copper, uses 7440-56-4, Germanium, uses 7782-42-5, Graphite, uses 12023-55-1, Iron silicide (Fe<sub>3</sub>Si<sub>7</sub>) 12031-95-7, Lithium titanium oxide (Li<sub>4</sub>Ti<sub>5</sub>O<sub>12</sub>) 12036-84-9, Tungsten oxide (W<sub>2</sub>O<sub>5</sub>) 12042-55-6, Aluminum silicide (AlSi) 12334-14-4, Tin silicide (SnSi) 18282-10-5, Tin dioxide 21651-19-4, Tin monoxide 39445-33-5 53095-76-4, Lithium silicide (LiSi) 113443-18-8, Silicon oxide (SiO) 160479-36-7, Lithium **tin** oxide 178958-56-0, Lithium silicon oxide 855472-17-2, Iron silicide (FeSi<sub>19</sub>) 855472-21-8, Aluminum nickel silicide (Al<sub>9</sub>NiSi<sub>10</sub>) 855472-26-3, Tin titanium silicide (SnTi<sub>18</sub>Si) 855475-31-9  
**(anode** active substance for lithium secondary batteries)

L42 ANSWER 2 OF 9 HCA COPYRIGHT 2006 ACS on STN

142:41483 Nonaqueous electrolytic solution containing aromatic compounds and its use in secondary lithium **battery**. Takehara, Masahiro; Shima, Kunihisa (Mitsubishi Chemical Corp., Japan). Jpn. Kokai Tokkyo Koho JP 2004349131 A2 20041209, 18 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2003-145311 20030522.

AB The soln. contains Li salts dissolved in nonaq. solvents contg. R<sub>1</sub>CR<sub>2</sub>HA [R<sub>1</sub>, R<sub>2</sub> = (un)substituted alkyl; R<sub>1</sub> and R<sub>2</sub> may be bonded to form (un)substituted hydrocarbon ring; A = substituted Ph;  $\geq 1$  of C on m-position to R<sub>1</sub>CR<sub>2</sub>H in A has substituted group]. The **battery** using the soln. has high charge-discharge efficiency, capacity retention, energy d., and safety in wide temp. region.

IT **7440-31-5D, Tin**, compds.

**(anode** contg.; nonaq. electrolytic soln. contg. specific benzene derivs. for overcharging prevention in Li **battery**)

RN 7440-31-5 HCA

CN Tin (8CI, 9CI) (CA INDEX NAME)

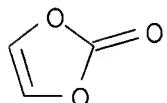
Sn

IT **872-36-6**, Vinylene carbonate

(film former, soln. contg.; nonaq. electrolytic soln. contg. specific benzene derivs. for overcharging prevention in Li **battery**)

RN 872-36-6 HCA

CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



IC ICM H01M010-40  
ICS H01M004-02; H01M004-38; H01M004-40; H01M004-58  
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
ST arom compd nonaq electrolytic soln lithium **battery**;  
benzene deriv overcharging prevention nonaq **battery** safety  
IT Secondary **batteries**  
(lithium; nonaq. electrolytic soln. contg. specific benzene  
derivs. for overcharging prevention in Li **battery**)  
IT **Battery** electrolytes  
(nonaq. electrolytic soln. contg. specific benzene derivs. for  
overcharging prevention in Li **battery**)  
IT 7429-90-5D, Aluminum, compds. 7440-21-3D, Silicon, compds.  
**7440-31-5D**, Tin, compds. 7440-56-4D, Germanium,  
compds. 7782-42-5, KS 44, uses  
(anode contg.; nonaq. electrolytic soln. contg.  
specific benzene derivs. for overcharging prevention in Li  
**battery**)  
IT 110-83-8, Cyclohexene, reactions 615-37-2, 1-Iodo-2-methylbenzene  
(benzene derivs. from; nonaq. electrolytic soln. contg. specific  
benzene derivs. for overcharging prevention in Li **battery**  
)  
IT 12190-79-3, Cobalt lithium oxide (LiCoO<sub>2</sub>) 12737-30-3, Cobalt  
nickel oxide 51845-85-3, Cobalt manganese oxide  
(cathode contg.; nonaq. electrolytic soln. contg. specific  
benzene derivs. for overcharging prevention in Li **battery**  
)  
IT 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium  
hexafluorophosphate  
(electrolyte; nonaq. electrolytic soln. contg. specific benzene  
derivs. for overcharging prevention in Li **battery**)  
IT **872-36-6**, Vinylene carbonate  
(film former, soln. contg.; nonaq. electrolytic soln. contg.  
specific benzene derivs. for overcharging prevention in Li  
**battery**)  
IT 1717-82-4P, 1-Cyclohexyl-2-fluorobenzene 4501-35-3P 91766-85-7P  
(nonaq. electrolytic soln. contg. specific benzene derivs. for  
overcharging prevention in Li **battery**)  
IT 803745-27-9  
(nonaq. electrolytic soln. contg. specific benzene derivs. for  
overcharging prevention in Li **battery**)  
IT 96-48-0,  $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate  
105-58-8, Diethyl carbonate 108-29-2,  $\gamma$ -Valerolactone  
108-32-7, Propylene carbonate 542-28-9,  $\delta$ -Valerolactone  
616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate  
4437-85-8, Butylene carbonate  
(solvent; nonaq. electrolytic soln. contg. specific benzene  
derivs. for overcharging prevention in Li **battery**)

L42 ANSWER 3 OF 9 HCA COPYRIGHT 2006 ACS on STN

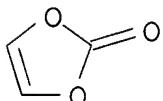
142:41478 Charging-discharging method for secondary nonaqueous electrolyte **battery**. Takesawa, Shuji; Shimamura, Harushige; Oyama, Hideaki; Bito, Yasuhiko (Matsushita Electric Industrial Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2004349016 A2 (20041209, 21 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2003-142119 20030520.

AB The **battery** having an anode contg. active mass with Li-intercalatable  $\text{Li}_x\text{M}$  phase ( $\text{M} = \text{Sn, Si}$ ) is charged and discharged to satisfy  $x = 0-2.33$  in the phase. Preferably, the **battery** uses nonaq. electrolyte contg. cyclic carbonate, e.g., vinylene carbonate, vinyl ethylene carbonate. The active mass may contain Si-Ti alloy or Sn-Ti alloy phase. The method improves charge-discharge cycle performance of the **battery**.

IT 872-36-6, Vinylene carbonate 4427-96-7, Vinyl ethylene carbonate (electrolytic soln. contg.; charging-discharging method for nonaq. **battery** using Li-intercalatable phase in anode active mass)

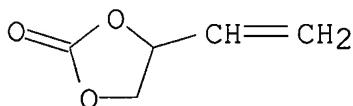
RN 872-36-6 HCA

CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



RN 4427-96-7 HCA

CN 1,3-Dioxolan-2-one, 4-ethenyl- (9CI) (CA INDEX NAME)



IC ICM H01M010-44

ICS H01M010-40

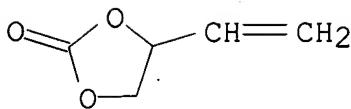
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lithium intercalatable anode phase **battery** chargingdischarging; **tin** lithium phase **anode** nonaq**battery**; **silicon** lithium phase **anode**nonaq **battery**IT **Battery** anodes(charging-discharging method for nonaq. **battery** using Li-intercalatable phase in anode active mass)IT Secondary **batteries**(lithium; charging-discharging method for nonaq. **battery**)

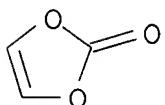
using Li-intercalatable phase in anode active mass)  
 IT 12031-85-5, Lithium silicide (Li<sub>2</sub>Si) 51404-25-2 53322-71-7  
 74969-13-4, Lithium silicide (Li<sub>2.33</sub>Si) 110641-52-6, Lithium  
 silicide (Li<sub>1.71</sub>Si) 440124-32-3  
 (anode phase; charging-discharging method for nonaq.  
 battery using Li-intercalatable phase in anode active  
 mass)  
 IT 872-36-6, Vinylene carbonate **4427-96-7**, Vinyl  
 ethylene carbonate  
 (electrolytic soln. contg.; charging-discharging method for  
 nonaq. battery using Li-intercalatable phase in anode  
 active mass)  
 IT 7440-21-3, Silicon, uses 7440-31-5, Tin, uses  
 (phase, anode contg.; charging-discharging method for  
 nonaq. battery using Li-intercalatable phase in anode  
 active mass)  
 IT 12017-12-8P, Cobalt silicide (CoSi<sub>2</sub>) 12019-69-1P 12023-01-7P  
 12039-83-7P, Titanium silicide (TiSi<sub>2</sub>) 12166-63-1P 12201-89-7P,  
 Nickel silicide (NiSi<sub>2</sub>) 12509-20-5P  
 (phase, anode contg.; charging-discharging method for nonaq.  
 battery using Li-intercalatable phase in anode active  
 mass)

L42 ANSWER 4 OF 9 HCA COPYRIGHT 2006 ACS on STN  
 141:159909 Electrolyte additive for a lithium ion **battery** with  
**tin anode**. Jarvis, Christine Ruth (Aea Technology  
 Battery Systems Limited, UK). PCT Int. Appl. WO 2004070867 A2  
 20040819, 7 pp. DESIGNATED STATES: W: AE, AE, AG, AL, AL, AM, AM,  
 AM, AT, AT, AU, AZ, AZ, BA, BB, BG, BG, BR, BR, BW, BY, BY, BZ, BZ,  
 CA, CH, CN, CO, CO, CR, CR, CU, CU, CZ, CZ, DE, DE, DK, DK, DM,  
 DZ, EC, EC, EE, EE, EG, ES, ES, FI, FI, GB, GD, GE, GE, GH, GM, HR,  
 HR, HU, HU, ID, IL, IN, IS, JP, JP, KE, KE, KG, KG, KP, KP, KP, KR,  
 KR, KZ, KZ, KZ, LC, LK, LR, LS, LS, LT, LU, LV, MA, MD, MD, MG, MK,  
 MN, MW, MX, MX, MZ, MZ, NA, NI; RW: AT, BE, BF, BJ, CF, CG, CH, CI,  
 CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE,  
 NL, PT, SE, SN, TD, TG, BF, BJ, CF, CG, CI, CM, GA, ML, MR, NE, SN,  
 TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2004-GB153  
 20040116. PRIORITY: GB 2003-2689 20030206.

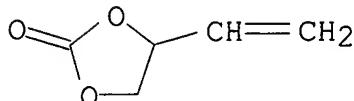
AB The invention concerns an electrolyte for use in a lithium ion cell  
 that has a **tin anode**, the electrolyte comprising  
 0.5-20 vol.% vinyl ethylene carbonate. The electrolyte also  
 comprises ethylene carbonate and propylene carbonate.  
 IT **4427-96-7**, Vinyl ethylene carbonate  
 (electrolyte additive for lithium ion **battery** with  
**tin anode**)  
 RN 4427-96-7 HCA  
 CN 1,3-Dioxolan-2-one, 4-ethenyl- (9CI) (CA INDEX NAME)



IC ICM H01M010-40  
 ICS H01M006-16  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST electrolyte additive lithium ion **battery tin**  
**anode**  
 IT **Battery** anodes  
**Battery** electrolytes  
 (electrolyte additive for lithium ion **battery** with  
**tin anode**)  
 IT Secondary **batteries**  
 (lithium; electrolyte additive for lithium ion **battery**  
 with **tin anode**)  
 IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate  
**4427-96-7**, Vinyl ethylene carbonate 7440-31-5, Tin, uses  
 12190-79-3, Cobalt lithium oxide colio2 21324-40-3, Lithium  
 hexafluorophosphate  
 (electrolyte additive for lithium ion **battery** with  
**tin anode**)  
 L42 ANSWER 5 OF 9 HCA COPYRIGHT 2006 ACS on STN  
 141:26166 Secondary **battery**. Kawase, Kenichi; Takada, Tomoo;  
 Miyaki, Yukio (Sony Corp., Japan). Jpn. Kokai Tokkyo Koho JP  
 2004171877 A2 20040617, 15 pp. (Japanese). CODEN: JKXXAF.  
 APPLICATION: JP 2002-335055 20021119.  
 AB The **battery** has a cathode, an anode, and an electrolyte  
 soln.; where the anode has a collector and an active mass layer  
 alloying with the collector at  $\geq 1$  part of the interface  
 between the collector and established on the collector; and the  
 electrolyte soln. contains an electrolyte salt and an unsatd. bond  
 contg. cyclic carbonate.  
 IT **872-36-6**, Vinylene carbonate **4427-96-7**, Vinyl  
 ethylene carbonate **12645-62-4** **12668-36-9**  
 (secondary **batteries** having alloy interfaces in  
**anodes** and unsatd. bond contg. cyclic carbonates in  
 electrolyte solns.)  
 RN 872-36-6 HCA  
 CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



RN 4427-96-7 HCA  
CN 1,3-Dioxolan-2-one, 4-ethenyl- (9CI) (CA INDEX NAME)



RN 12645-62-4 HCA  
CN Copper alloy, nonbase, Cu, Si (9CI) (CA INDEX NAME)

Component	Component
Registry	Number

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Cu 7440-50-8  
Si 7440-21-3

RN 12668-36-9 HCA  
CN Copper alloy, nonbase, Cu, Sn (9CI) (CA INDEX NAME)

Component	Component
	Registry Number
=====	=====

Cu 7440-50-8  
Sn 7440-31-5

IC ICM H01M010-40  
ICS H01M002-02; H01M004-02; H01M004-38  
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
ST secondary **battery** anode active mass collector alloy  
interface; **battery** electrolyte solvent unsatd bond contg  
cyclic carbonate  
IT **Battery** anodes  
Secondary **batteries**  
(secondary **batteries** having alloy interfaces in anodes  
and unsatd. bond contg. cyclic carbonates in electrolyte solns.)  
IT 7440-21-3, Silicon, uses  
(amorphous; secondary **batteries** having alloy interfaces  
in anodes and unsatd. bond contg. cyclic carbonates in  
electrolyte solns.)  
IT 12190-79-3, Cobalt lithium oxide (CoLiO<sub>2</sub>)  
(cathode; secondary **batteries** having alloy interfaces  
in anodes and unsatd. bond contg. cyclic carbonates in  
electrolyte solns.)  
IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate  
616-38-6, Dimethyl carbonate **872-36-6**, Vinylene carbonate  
**4427-96-7**, Vinyl ethylene carbonate 7440-31-5D, Tin, gold  
plated 7440-50-8, Copper, uses 7782-42-5, Graphite, uses

**12645-62-4 12668-36-9** 21324-40-3, Lithium hexafluorophosphate  
 (secondary **batteries** having alloy interfaces in **anodes** and unsatd. bond contg. cyclic carbonates in electrolyte solns.)

L42 ANSWER 6 OF 9 HCA COPYRIGHT 2006 ACS on STN

141:26165 Secondary **battery**. Kawase, Kenichi; Takada, Tomoo; Miyaki, Yukio (Sony Corp., Japan). Jpn. Kokai Tokkyo Koho JP 2004171876 A2 20040617, 17 pp. (Japanese). CODEN: JKXXAF.

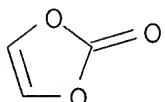
APPLICATION: JP-2002-335054 20021119.

AB The **battery** has a cathode, an anode, and an electrolyte soln.; where the anode has a collector and an active mass layer alloying with the collector at  $\geq 1$  part of the interface between the collector and established on the collector; and the electrolyte soln. contains an electrolyte salt and a cyclic carbonate and/or its deriv(s).

IT **872-36-6**, Vinylene carbonate **4427-96-7**, Vinyl ethylene carbonate **12645-62-4 12668-36-9**  
 (secondary **batteries** contg. alloy interfaces in **anodes** and cyclic carbonates in electrolyte solns.)

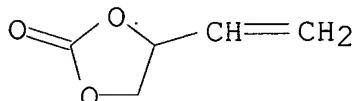
RN 872-36-6 HCA

CN 1,3-Dioxol-2-one. (9CI) (CA INDEX NAME)



RN 4427-96-7 HCA

CN 1,3-Dioxolan-2-one, 4-ethenyl- (9CI) (CA INDEX NAME)



RN 12645-62-4 HCA

CN Copper alloy, nonbase, Cu, Si (9CI) (CA INDEX NAME)

Component      Component  
 Registry Number  
 =====+=====

Cu              7440-50-8  
 Si              7440-21-3

RN 12668-36-9 HCA

CN Copper alloy, nonbase, Cu, Sn (9CI) (CA INDEX NAME)

Component	Component
	Registry Number

---

Cu	7440-50-8
Sn	7440-31-5

IC ICM H01M010-40  
 ICS H01M002-02; H01M004-02; H01M004-38; H01M004-66  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST secondary **battery** anode active mass collector alloy  
 interface; **battery** electrolyte solvent cyclic carbonate  
 deriv  
 IT **Battery** anodes  
 Secondary **batteries**  
 (secondary **batteries** contg. alloy interfaces in anodes  
 and cyclic carbonates in electrolyte solns.)  
 IT 12190-79-3, Cobalt lithium oxide (CoLiO<sub>2</sub>)  
 (cathode; secondary **batteries** contg. alloy interfaces  
 in anodes and cyclic carbonates in electrolyte solns.)  
 IT 96-48-0,  $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate  
**872-36-6**, Vinylene carbonate **4427-96-7**, Vinyl  
 ethylene carbonate 7440-21-3, Silicon, uses 7440-31-5D, Tin,  
 gold plated 7440-50-8, Copper, uses **12645-62-4**  
**12668-36-9** 21324-40-3, Lithium hexafluorophosphate  
 (secondary **batteries** contg. alloy interfaces in  
**anodes** and cyclic carbonates in electrolyte solns.)

L42 ANSWER 7 OF 9 HCA COPYRIGHT 2006 ACS on STN  
 140:29537 Electrolyte solution for secondary lithium **battery**  
 and the **battery** using the solution. Utsugi, Koji; Mori,  
 Mitsuhiko (NEC Corporation, Japan). PCT Int. Appl. WO 2003105268 A1  
**20031218**, 31 pp. DESIGNATED STATES: W: CA, CN, KR; RW: AT,  
 BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE,  
 TR. (Japanese). CODEN: PIXXD2. APPLICATION: WO 2003-JP7418  
 20030611. PRIORITY: JP 2002-170228 20020611.

AB The electrolyte soln. comprises at least imide anions, transition  
 metal ions and a compd. having a sulfonyl group, in an aprotic  
 solvent. The **battery** using the electrolyte soln. has long  
 cycle life and high safety.

IT **68848-64-6**  
 (anode; electrolyte solns. contg. sulfonyl compds.,  
 transition metal ions and imide anions for secondary lithium  
**batteries**)

RN 68848-64-6 HCA  
 CN Lithium alloy, nonbase, Li, Si (9CI) (CA INDEX NAME)

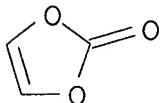
Component	Component
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## Registry Number

=====+=====

Li	7439-93-2
Si	7440-21-3

IT **872-36-6**, Vinylene carbonate  
 (electrolyte solns. contg. sulfonyl compds., transition metal  
 ions and imide anions for secondary lithium **batteries**)  
 RN 872-36-6 HCA  
 CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



IC ICM H01M010-40  
 ICS H01M004-02  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST secondary lithium **battery** electrolyte aprotic solvent;  
**battery** electrolyte imide transition metal sulfonyl compd  
 IT **Battery** electrolytes  
 (electrolyte solns. contg. sulfonyl compds., transition metal  
 ions and imide anions for secondary lithium **batteries**)  
 IT Secondary **batteries**  
 (lithium; electrolyte solns. contg. sulfonyl compds., transition  
 metal ions and imide anions for secondary lithium  
**batteries**)  
 IT 7440-44-0, Carbon, uses  
 (amorphous; anode; electrolyte solns. contg. sulfonyl compds.,  
 transition metal ions and imide anions for secondary lithium  
**batteries**)  
 IT 7439-93-2, Lithium, uses 7782-42-5, Graphite, uses  
**68848-64-6**  
 (anode; electrolyte solns. contg. sulfonyl compds.,  
 transition metal ions and imide anions for secondary lithium  
**batteries**)  
 IT 12057-17-9, Lithium manganese oxide (LiMn<sub>2</sub>O<sub>4</sub>)  
 (cathode; electrolyte solns. contg. sulfonyl compds., transition  
 metal ions and imide anions for secondary lithium  
**batteries**)  
 IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate  
 108-32-7, Propylene carbonate **872-36-6**, Vinylene carbonate  
 1120-71-4, 1,3-Propane sultone 132843-44-8 259194-36-0  
 259194-40-6 634598-36-0 634598-37-1  
 (electrolyte solns. contg. sulfonyl compds., transition metal  
 ions and imide anions for secondary lithium **batteries**)

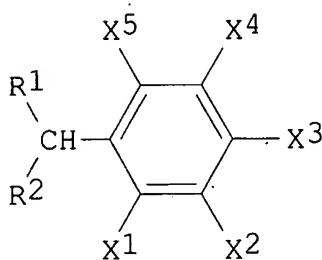
L42 ANSWER 8 OF 9 HCA COPYRIGHT 2006 ACS on STN

139:367536 Nonaqueous electrolyte lithium secondary **battery**.

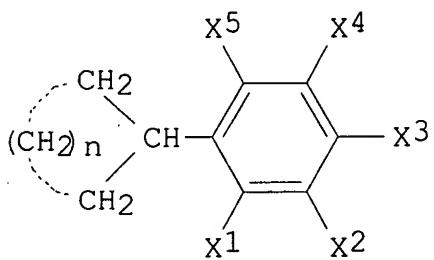
Sasaki, Yukio; Takehara, Masahiro; Ue, Makoto (Mitsubishi Chemical Corp., Japan). Jpn. Kokai Tokkyo Koho JP 2003317803 A2

20031107, 12 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2003-41853 20030219. PRIORITY: JP 2002-43703 20020220.

GI



I



II

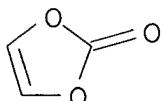
AB The **battery** comprises an **anode** contg. Si, Sn, Ge, Al, and carbon materials, a **cathode** contg. LiCoO<sub>2</sub>, LiNiO<sub>2</sub>, and LiMnO<sub>2</sub>, and nonaq. electrolyte comprising C3-9 lactones, cyclic carbonates, linear carbonates, linear ethers, and linear carboxylates. The nonaq. electrolyte contains 5-100 mol% of Li salts (e.g. LiBF<sub>4</sub>, LiPF<sub>6</sub>), 0.1-10 wt.% of F-contg. compds. having formulas of (I) and (II), where X<sub>1</sub>-X<sub>5</sub> are independent H or F, R<sub>1</sub> and R<sub>2</sub> are alkyl or cycloalkyl, and n is an integer of 2-10. The **battery** has high charging-discharging efficiency and high energy d., and is excellent in elec. capacity and safety in wide temp. range.

IT 872-36-6, Vinylene carbonate

(nonaq. electrolyte lithium secondary **battery**)

RN 872-36-6 HCA

CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



IC ICM H01M010-40

ICS C07C025-13; H01M004-02; H01M004-38; H01M004-48; H01M004-58

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST nonaq electrolyte lithium secondary **battery**IT **Battery** electrolytes(Nonaq.; nonaq. electrolyte lithium secondary **battery**)

IT Carboxylic acids, uses

(esters; nonaq. electrolyte lithium secondary **battery**)

IT Secondary **batteries**  
(nonaq. electrolyte lithium secondary **battery**)

IT Carbonates, uses  
Ethers, uses  
Lactones  
(nonaq. electrolyte lithium secondary **battery**)

IT 96-48-0,  $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate  
105-58-8, Diethyl carbonate 108-29-2,  $\gamma$ -Valerolactone  
108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate  
623-53-0, Ethylmethyl carbonate **872-36-6**, Vinylene  
carbonate 1717-82-4, 1-Cyclohexyl-2-fluorobenzene 1717-83-5,  
1-Cyclohexyl-3-fluorobenzene 1717-84-6, 1-Cyclohexyl-4-  
fluorobenzene 4437-85-8, Butylene carbonate 7429-90-5, Aluminum,  
uses 7439-93-2, Lithium, uses 7440-21-3, Silicon, uses  
7440-31-5, Tin, uses 7440-44-0, Carbon, uses 7440-56-4,  
Germanium, uses 12031-65-1, Lithium nickel oxide (LiNiO<sub>2</sub>)  
12162-79-7, Lithium manganese oxide (LiMnO<sub>2</sub>) 14283-07-9, Lithium  
tetrafluoro borate 21324-40-3, Lithium hexafluoro phosphate  
52627-24-4, Cobalt lithium oxide  
(nonaq. electrolyte lithium secondary **battery**)

L42 ANSWER 9 OF 9 HCA COPYRIGHT 2006 ACS on STN

138:224204 **Battery**. Adachi, Momoe; Fujita, Shigeru; Endo,  
Takuya; Iwakoshi, Yasunobu; Shibamoto, Goro (Sony Corporation,  
Japan). PCT Int. Appl. WO 2003019713 A1 **20030306**, 162 pp.  
DESIGNATED STATES: W: CN, JP, KR, US; RW: AT, BE, CH, CY, DE, DK,  
ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR. (Japanese).  
CODEN: PIXXD2. APPLICATION: WO 2002-JP8498 20020823. PRIORITY: JP  
2001-254547 20010824.

AB The **battery** has a cathode, contg. a Li composite oxide  
active mass having Li and/or Ni and O, an anode contg. a Li  
intercalating material and/or Li in its active mass, and an  
electrolyte-impregnated separator in between; where the  
**battery** has charging voltage  $\geq$  4.25 V, and a total  
amt. of Li carbonate and Li sulfate is 1.0 mass % of the cathode  
active mass. Preferably, the electrolyte has the concn. of a proton  
impurity  $\leq$  20 ppm and water  $\leq$  20 ppm.

IT **12668-36-9**  
(anode; secondary lithium **batteries** contg.  
electrolytes, Li or Li-intercalating **anodes** and Li  
composite oxide cathodes with controlled concn. of Li<sub>2</sub>CO<sub>3</sub> and  
Li<sub>2</sub>SO<sub>4</sub>)

RN 12668-36-9 HCA

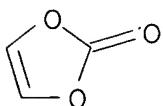
CN Copper alloy, nonbase, Cu,Sn (9CI) (CA INDEX NAME)

Component      Component  
                  Registry Number

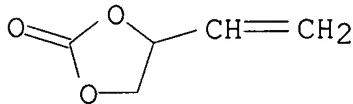
=====+=====

Cu 7440-50-8  
Sn 7440-31-5

IT 872-36-6, Vinylene carbonate 4427-96-7, Vinyl  
ethylene carbonate  
(secondary lithium **batteries** contg. electrolytes, Li or  
Li-intercalating anodes and Li composite oxide cathodes with  
controlled concn. of Li<sub>2</sub>CO<sub>3</sub> and Li<sub>2</sub>SO<sub>4</sub>)  
RN 872-36-6 HCA  
CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



RN 4427-96-7 HCA  
CN 1,3-Dioxolan-2-one, 4-ethenyl- (9CI) (CA INDEX NAME)



IC ICM H01M010-40  
ICS H01M004-02; H01M004-58; H01M004-40; H01M004-38  
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
ST secondary lithium **battery** structure high charging voltage  
energy d  
IT Secondary **batteries**  
(lithium; secondary lithium **batteries** contg.  
electrolytes, Li or Li-intercalating anodes and Li composite  
oxide cathodes with controlled concn. of Li<sub>2</sub>CO<sub>3</sub> and Li<sub>2</sub>SO<sub>4</sub>)  
IT 7439-93-2, Lithium, uses 7782-42-5, Graphite, uses  
**12668-36-9**  
(anode; secondary lithium **batteries** contg.  
electrolytes, Li or Li-intercalating **anodes** and Li  
composite oxide cathodes with controlled concn. of Li<sub>2</sub>CO<sub>3</sub> and  
Li<sub>2</sub>SO<sub>4</sub>)  
IT 12190-79-3, Cobalt lithium oxide (CoLiO<sub>2</sub>)  
(cathode; secondary lithium **batteries** contg.  
electrolytes, Li or Li-intercalating anodes and Li composite  
oxide cathodes with controlled concn. of Li<sub>2</sub>CO<sub>3</sub> and Li<sub>2</sub>SO<sub>4</sub>)  
IT 7791-03-9, Lithium perchlorate 14283-07-9, Lithium  
tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate  
90076-65-6 132843-44-8  
(electrolyte; secondary lithium **batteries** contg.)

electrolytes, Li or Li-intercalating anodes and Li composite oxide cathodes with controlled concn. of Li<sub>2</sub>CO<sub>3</sub> and Li<sub>2</sub>SO<sub>4</sub>)

IT 96-48-0,  $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 872-36-6, Vinylene carbonate 4427-96-7, Vinyl ethylene carbonate 12031-65-1, Lithium nickel oxide (LiNiO<sub>2</sub>) 113066-92-5, Cobalt lithium nickel oxide (Co0.9LiNi0.1O<sub>2</sub>) 118557-79-2, Cobalt iron lithium oxide (Co0.9Fe 0.1LiO<sub>2</sub>) 128975-24-6, Lithium manganese nickel oxide (LiMn0.5Ni0.5O<sub>2</sub>) 185746-84-3, Aluminum lithium magnesium nickel oxide (Al0.05LiMg0.05Ni0.9O<sub>2</sub>) 202916-35-6, Chromium cobalt lithium nickel oxide (Cr0.05Co0.2LiNi0.75O<sub>2</sub>) 287718-97-2, Aluminum lithium manganese nickel oxide (Al0.05LiMn0.05Ni0.9O<sub>2</sub>) 346417-97-8, Cobalt lithium manganese nickel oxide (Co0.33LiMn0.33Ni0.33O<sub>2</sub>) 364589-12-8, Aluminum cobalt lithium titanium oxide (Al0.05Co0.9LiTi0.05O<sub>2</sub>) 475637-37-7, Aluminum cobalt lithium nickel oxide (Al0.05Co0.8LiNi0.15O<sub>2</sub>) 478814-69-6, Aluminum cobalt lithium magnesium oxide (Al0.05Co0.9LiMg0.05O<sub>2</sub>) 500867-92-5, Cobalt lithium magnesium manganese oxide (Co0.8LiMg0.05Mn0.15O<sub>2</sub>) 500867-93-6, Aluminum iron lithium nickel oxide (Al0.15Fe0.05LiNi0.8O<sub>2</sub>) 500867-94-7, Aluminum cobalt lithium nickel oxide (Al0.2Co0.3LiNi0.5O<sub>2</sub>) 500867-98-1, Cobalt lithium magnesium nickel oxide (Co0.45LiMg0.05Ni0.5O<sub>2</sub>) 500867-99-2, Cobalt lithium nickel titanium oxide (Co0.35LiNi0.6Ti0.05O<sub>2</sub>) 500868-00-8, Cobalt iron lithium nickel oxide (Co0.25Fe0.1LiNi0.65O<sub>2</sub>) 500868-01-9 500868-02-0 500868-03-1 500868-04-2 500868-05-3 500868-09-7 500868-10-0 500868-11-1 500868-12-2 (secondary lithium **batteries** contg. electrolytes, Li or Li-intercalating anodes and Li composite oxide cathodes with controlled concn. of Li<sub>2</sub>CO<sub>3</sub> and Li<sub>2</sub>SO<sub>4</sub>)

=> D L43 1-7 CBIB ABS HITSTR HITIND

L43 ANSWER 1 OF 7 HCA COPYRIGHT 2006 ACS on STN

143:81169 Secondary lithium **battery** and its manufacture.

Fukui, Atsushi; Torimae, Mariko; Kusumoto, Yasuyuki; Sayama, Katsunobu; Kamino, Maruo (Sanyo Electric Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2005174653 A2 20050630, 18 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2003-410592 20031209.

AB The **battery** comprises a cathode, having a cathode mixt. layer, which consists of a cathode active mass and a cathode binder on a cathode collector; an anode, having an anode active mass layer, which consists of a Si or Si alloy-contg. **anode** active mass and an anode binder, fired and arranged on an anode collector, a separator between the 2 electrodes, and a nonaq. electrolyte; where in the bent part of the anode mixt. the opposing cathode mixt. layer does not exist in order for not having

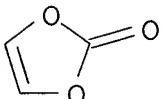
charge-discharge reaction. The method for manufg. the above **battery** is also disclosed.

IT 872-36-6, Vinylene carbonate

(structure and manuf. of secondary lithium **batteries** for excellent cycle characteristics)

RN 872-36-6 HCA

CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



IC ICM H01M010-40

ICS H01M004-02; H01M004-04; H01M004-38; H01M004-62; H01M004-66

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary lithium **battery** manuf **anode**

**silicon** alloy

IT Secondary **batteries**

(structure and manuf. of secondary lithium **batteries** for excellent cycle characteristics)

IT Fluoropolymers, uses

Polyimides, uses

(structure and manuf. of secondary lithium **batteries** for excellent cycle characteristics)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate

872-36-6, Vinylene carbonate 7429-90-5, Aluminum, uses

7440-21-3, Silicon, uses 7440-50-8, Copper, uses 12190-79-3,

Cobalt lithium oxide (CoLiO<sub>2</sub>) 21324-40-3, Lithium

hexafluorophosphate 24937-79-9, PVDF

(structure and manuf. of secondary lithium **batteries** for excellent cycle characteristics)

L43 ANSWER 2 OF 7 HCA COPYRIGHT 2006 ACS on STN

142:282858 Nonaqueous electrolyte solution and secondary nonaqueous electrolyte **battery** and its manufacture. Inamasu, Tokuo; Nukuta, Toshiyuki (Yuasa Corporation, Japan). Jpn. Kokai Tokkyo

Koho JP 2005063772 A2 20050310, 15 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2003-290791 20030808.

AB The electrolyte soln. has a S=O bond contg. cyclic org. compd. The **battery** has a cathode, an anode, using a Li-intercalating Si material, and the above electrolyte soln. The **battery** is manufd. by prep. an anode by forming a microcrystal Si layer on an electron conductive material by sputtering.

IT 7440-21-3, Silicon, uses

(anodes contg. microcrystal Si in manuf. of secondary lithium **batteries**)

RN 7440-21-3 HCA

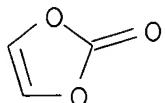
CN Silicon (7CI, 8CI, 9CI) (CA INDEX NAME)

Si

IT 872-36-6, Vinylene carbonate  
 (electrolyte solns. contg. cyclic org. sulfinyl compds.. for  
 secondary lithium **batteries**)

RN 872-36-6 HCA

CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



IC ICM H01M010-40  
 ICS H01M004-02; H01M004-38

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary lithium **battery** electrolyte cyclic org sulfinyl  
 compd; **anode silicon** secondary lithium  
**battery** manuf

IT **Battery** anodes  
 (anodes contg. microcrystal **Si** in manuf. of  
 secondary lithium **batteries**)

IT **Battery** electrolytes  
 (electrolyte solns. contg. cyclic org. sulfinyl compds. for  
 secondary lithium **batteries**)

IT Secondary **batteries**  
 (lithium; electrolytes contg. cyclic org. sulfinyl compds. and  
 anodes contg. microcrystal **Si** for secondary  
 lithium **batteries**)

IT 7440-21-3, Silicon, uses  
 (anodes contg. microcrystal **Si** in manuf. of  
 secondary lithium **batteries**)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate  
 872-36-6, Vinylene carbonate 1120-71-4, 1,3-Propane  
 sultone 21324-40-3, Lithium hexafluorophosphate  
 (electrolyte solns. contg. cyclic org. sulfinyl compds. for  
 secondary lithium **batteries**)

IT 12190-79-3, Cobalt lithium oxide (CoLiO<sub>2</sub>)  
 (electrolytes contg. cyclic org. sulfinyl compds. and  
 anodes contg. microcrystal **Si** for secondary  
 lithium **batteries**)

L43 ANSWER 3 OF 7 HCA COPYRIGHT 2006 ACS on STN

142:59739 Secondary lithium **battery** and its manufacture.

Jito, Daizo; Tamura, Noriyuki; Sakitani, Nobuhiro; Minami, Hiroshi;

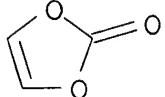
Yagi, Hiromasa; Kamino, Maruo; Sayama, Katsunobu; Kato, Yoshio; Matsuta, Shigeaki (Sanyo Electric Co., Ltd., Japan). PCT Int. Appl. WO 2004109839 A1 20041216, 55 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (Japanese). CODEN: PIXXD2. APPLICATION: WO 2004-JP7691 20040603. PRIORITY: JP 2003-163692 20030609; JP 2003-432477 20031226; JP 2004-80919 20040319; JP 2004-132741 20040428.

AB The **battery** has an anode, contg. an amorphous Si thin film or a Si based amorphous thin film on a collector, a cathode, and a nonaq. electrolyte soln.; where the **battery** has CO<sub>2</sub> dissolved in the electrolyte soln. The **battery** is manufd. by prep. an anode by depositing an amorphous Si thin film or a Si based amorphous thin film on a collector, dissolving CO<sub>2</sub> in a nonaq. electrolyte soln.; and assembling the **battery** by using the anode, a cathode, and the electrolyte soln.

IT 872-36-6, Vinylene carbonate  
(manuf. of secondary lithium **batteries** contg. carbon dioxide dissolved electrolyte solns.)

RN 872-36-6 HCA

CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



IC ICM H01M010-40  
ICS H01M004-02; H01M004-04; H01M004-38; H01M004-64; H01M004-66

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary lithium **battery** manuf carbon dioxide dissolved electrolyte; **battery anode silicon**  
based alloy amorphous silicon

IT Secondary **batteries**  
(lithium; manuf. of secondary lithium **batteries** contg. carbon dioxide dissolved electrolyte solns.)

IT **Battery** electrolytes  
(manuf. of secondary lithium **batteries** contg. carbon dioxide dissolved electrolyte solns.)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate  
872-36-6, Vinylene carbonate 7440-21-3, Silicon, uses  
12190-79-3, Cobalt lithium oxide (CoLiO<sub>2</sub>) 21324-40-3, Lithium

hexafluorophosphate

(manuf. of secondary lithium **batteries** contg. carbon dioxide dissolved electrolyte solns.)

IT 108-32-7, Propylene carbonate 124-38-9, Carbon dioxide, uses 616-38-6, Dimethyl carbonate 623-53-0, Methyl ethyl carbonate 4437-85-8, Butylene carbonate 7791-03-9, Lithium perchlorate 138096-56-7 246539-14-0 288611-80-3

(manuf. of secondary lithium **batteries** contg. carbon dioxide dissolved electrolyte solns.)

IT 37198-76-8

(microalloyed; manuf. of secondary lithium **batteries** contg. carbon dioxide dissolved electrolyte solns.)

L43 ANSWER 4 OF 7 HCA COPYRIGHT 2006 ACS on STN

141:352775 Secondary lithium **battery**. Yanai, Atsushi; Yanagida, Katsunori; Kita, Yoshinori; Ikemachi, Takaaki; Noma, Toshiyuki (Sanyo Electric Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2004296181 A2/20041021, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2003-84871 20030326.

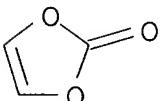
AB The **battery** has an anode active mass contg. anode, a cathode active mass contg. cathode, and a nonaq. electrolyte soln., contg. a  $\gamma$ -butyrolactone based solvent mixt.; where the anode active mass is a carbonaceous material, contg.  $\geq 15$  ppm S; and the electrolyte soln. contains  $\leq 4$  ppm S.

IT 872-36-6, Vinylene carbonate

(carbonaceous **anode** active mass and electrolyte solns. contg. sulfur with controlled amt. for secondary lithium **batteries**)

RN 872-36-6 HCA

CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



IC ICM H01M010-40

ICS H01M004-02; H01M004-58

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lithium secondary **battery** anode sulfur contg carbonaceous material

IT **Battery** anodes

(carbonaceous anode active mass and electrolyte solns. contg. sulfur with controlled amt. for secondary lithium **batteries**)

IT Secondary **batteries**

(lithium; carbonaceous anode active mass and electrolyte solns. contg. sulfur with controlled amt. for secondary lithium

**batteries)**

IT 96-48-0,  $\gamma$ -Butyrolactone 7440-44-0, Carbon, uses  
 12190-79-3, Cobalt lithium oxide (CoLiO<sub>2</sub>) 14283-07-9, Lithium  
 tetrafluoroborate

(carbonaceous anode active mass and electrolyte solns. contg.  
 sulfur with controlled amt. for secondary lithium  
**batteries)**

IT 78-42-2, Trioctyl phosphate **872-36-6**, Vinylene carbonate  
 7439-89-6, Iron, uses 7440-21-3, **Silicon**, uses  
 7704-34-9, Sulfur, uses

(carbonaceous **anode** active mass and electrolyte solns.  
 contg. sulfur with controlled amt. for secondary lithium  
**batteries)**

L43 ANSWER 5 OF 7 HCA COPYRIGHT 2006 ACS on STN

141:263472 Anode for rechargeable lithium **battery** and method  
 for fabrication thereof. Fukui, Atsushi; Torimae, Mariko; Kusumoto,  
 Yasayuki; Tarui, Hisaki (Sanyo-Electric Co., Ltd., Japan). Eur.  
 Pat. Appl. EP 1463133 A2, ~~20040329~~, 14 pp. DESIGNATED STATES: R:  
 AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE,  
 SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK.  
 (English). CODEN: EPXXDW. APPLICATION: EP 2004-7333 20040326.  
 PRIORITY: JP 2003-90502 20030328.

AB The invention concerns a neg. electrode for a rechargeable lithium  
**battery** which is obtained by sintering under a non-oxidizing  
 atm., in the form of a layer on a surface of a metal foil current  
 collector, an anode mix contg. a binder and particles of active  
 material contg. silicon and/or a **silicon** alloy; the  
**neg. electrode** being characterized in that the  
 metal foil current collector has projections and recesses on its  
 surface, the projection is shaped to have a recurved side face  
 portion that curves more outwardly as it extends closer to a distal  
 end of the projection, and the binder penetrates into spaces defined  
 by the recurved side face portions.

IT **7440-21-3, Silicon**, uses  
 (anode for rechargeable lithium **battery** and  
 method for fabrication thereof)

RN 7440-21-3 HCA

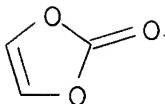
CN Silicon (7CI, 8CI, 9CI) (CA INDEX NAME)

Si

IT **872-36-6**, Vinylene carbonate  
 (anode for rechargeable lithium **battery** and method for  
 fabrication thereof)

RN 872-36-6 HCA

CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



IC ICM H01M004-70  
 ICS H01M004-64; H01M004-02  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 56  
 ST anode rechargeable lithium **battery**  
 IT **Battery** anodes  
 Surface roughness  
 (anode for rechargeable lithium **battery** and method for fabrication thereof)  
 IT Polyimides, uses  
 (anode for rechargeable lithium **battery** and method for fabrication thereof)  
 IT Secondary **batteries**  
 (lithium; anode for rechargeable lithium **battery** and method for fabrication thereof)  
 IT Electrodeposition  
 (surface roughening; anode for rechargeable lithium **battery** and method for fabrication thereof)  
 IT Silicon alloy, base  
 (anode for rechargeable lithium **battery** and method for fabrication thereof)  
 IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 7429-90-5, Aluminum, uses **7440-21-3, Silicon**, uses 7440-50-8, Copper, uses 12190-79-3, Cobalt lithium oxide colio2 21324-40-3, Lithium hexafluorophosphate (anode for rechargeable lithium **battery** and method for fabrication thereof)  
 IT **872-36-6**, Vinylene carbonate  
 (anode for rechargeable lithium **battery** and method for fabrication thereof)

L43 ANSWER 6 OF 7 HCA COPYRIGHT 2006 ACS on STN  
 140:44753 Anode for lithium secondary **battery**. Fukui, Atsushi; Kusumoto, Yasuyuki; Torimae, Mariko; Nakamura, Hiroshi (Japan). U.S. Pat. Appl. Publ. US 2003235762 A1 **20031225**, 10 pp. (English). CODEN: USXXCO. APPLICATION: US 2003-463438 **20030618**. PRIORITY: JP 2002-178165 20020619.

AB The invention concerns a neg. electrode for a lithium secondary **battery** obtained by providing an active material layer contg. particles of an active material and a binder on a surface of a current collector which is an elec. conductive metal foil, and sintering the layer under a non-oxidizing atm.; wherein the mean

diam. of the particles of the active material is not smaller than 1  $\mu\text{m}$  and not greater than 10  $\mu\text{m}$ , and the particle size distribution of the particles is such that at least 60 vol.% of the particles are in a range of not smaller than 1  $\mu\text{m}$  and not greater than 10  $\mu\text{m}$ .

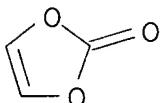
IT 872-36-6, Vinylene carbonate **7440-21-3**,

**Silicon**, uses

(anode for lithium secondary **battery**)

RN 872-36-6 HCA

CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



RN 7440-21-3 HCA

CN Silicon (7CI, 8CI, 9CI) (CA INDEX NAME)

Si

IC ICM H01M004-58

ICS H01M004-62; H01M004-66

INCL 429231950; 429245000; 429217000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST anode lithium secondary **battery**

IT **Battery** anodes

Particle size distribution

(anode for lithium secondary **battery**)

IT Fluoropolymers, uses

Polyimides, uses

(binder; anode for lithium secondary **battery**)

IT Secondary **batteries**

(lithium; anode for lithium secondary **battery**)

IT **Silicon** alloy, base

(anode for lithium secondary **battery**)

IT Copper alloy, base

(current collector; anode for lithium secondary **battery**)

)

IT 872-36-6, Vinylene carbonate **7440-21-3**,

**Silicon**, uses 12190-79-3, Cobalt lithium oxide colio2

(anode for lithium secondary **battery**)

IT 24937-79-9, Pvdf

(binder; anode for lithium secondary **battery**)

IT 7440-50-8, Copper, uses

(current collector; anode for lithium secondary **battery**)

)

IT 7440-22-4, Silver, uses  
(powder; anode for lithium secondary **battery**)

L43 ANSWER 7 OF 7 HCA COPYRIGHT 2006 ACS on STN  
135:245039 Secondary nonaqueous electrolyte **batteries**.

Takami, Norio (Toshiba Corp., Japan). Jpn. Kokai Tokkyo Koho JP  
2001266938 A2 **20010928**, 6 pp. (Japanese). CODEN: JKXXAF.

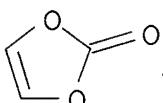
APPLICATION: JP 2000-72399 20000315.

AB The **batteries** use a nonaq. electrolyte soln. contg. org. Si compd. additives having Si-O or Si-C bonding. The electrolyte solns. may also contain vinylene carbonate. Another type of the **batteries** use anodes of a Li intercalating carbonaceous material having Si-O, Si-O-C, Si-C, Si-H, and/or Si-F bondings on its surface.

IT **872-36-6**, Vinylene carbonate  
(electrolyte solns. contg. org. silicon compd. additives for secondary lithium **batteries**)

RN 872-36-6 HCA

CN 1,3-Dioxol-2-one (9CI) (CA INDEX NAME)



IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary lithium **battery** electrolyte silicon compd  
additive; carbonaceous **anode** silicon compd  
modification lithium **battery**

IT **Battery** anodes  
(anodes from carbonaceous materials with silicon compd. modified surface for secondary lithium **batteries**)

IT Carbon fibers, uses  
(anodes from carbonaceous materials with silicon compd. modified surface for secondary lithium **batteries**)

IT **Battery** electrolytes  
(electrolyte solns. contg. org. silicon compd. additives for secondary lithium **batteries**)

IT Secondary **batteries**  
(lithium; secondary lithium **batteries** with silicon compd. modified carbonaceous **anodes** and silicon compd. contg. electrolyte solns.)

IT 7440-21-3D, **Silicon**, compds., uses  
(**anodes** from carbonaceous materials with silicon compd. modified surface for secondary lithium **batteries**)

IT 96-48-0,  $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate  
14283-07-9, Lithium fluoroborate

(electrolyte solns. contg. org. silicon compd. additives for  
secondary lithium **batteries**)

IT 78-10-4, Tetraethoxysilane 681-84-5, Tetramethoxysilane

**872-36-6**, Vinylene carbonate

(electrolyte solns. contg. org. silicon compd. additives for  
secondary lithium **batteries**)